REMARKS

Summary

Claims 1-7, 48, 52-54 and 58-60 were pending and Claims 1-4, 7, 48, 52-54 and 58-60 were rejected in the present Office action; Claims 5 and 6 were objected to. Claim 48 has been amended; Claim 71 has been cancelled; and, new Claim 72 has been introduced to clarify the subject matter. No new matter has been added. The Applicants have considered the references and the arguments made by the Examiner and respectfully traverse the rejections on the basis that a *prima facie* case of anticipation has not been set forth.

An amendment was submitted August 9, 2007, which was the subject of an advisory opinion mailed on August 23, 2007. The amendment of August 9, 2007 was not entered. This amendment takes account of the comments made by the Examiner in the advisory action.

Objections

Claim 48 has been amended to eliminate an apparent redundant reference to the more than one of the conductive rod pairs that are arranged as recited.

With respect to Claims 5 and 6, the Examiner has objected to the claims as being dependent on a rejected base claim, but indicated that the claims would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. The Applicant's express appreciation to the Examiner for this indication of allowable subject matter, but respectfully decline to make the suggested amendments as, as argued below, the base claims are allowable.

Claim Rejections

35 U.S.C. § 102(b)

Claims 1-4, 7, 48, 52-54 and 58-60 were rejected under 35 U.S.C. §102(b) as being anticipated by Hernandez (US RE 35,064; "Hernandez"). The reference is a reissue of US 5,065,284.

Claim 1 recites, *inter alia*, first conductive rods connected to the second conductive layer and extending to the first conductive layer, and chip capacitors connected to the first conductive rods and arranged in a lattice.

The Applicants and the Examiner have not been able to agree on the meaning of certain terms of electrical engineering art. The Examiner contends that, during examination, terms in the claims may be given their broadest reasonable interpretation.

The Applicants respectfully submit that the actual requirement is somewhat more restrictive. "The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach." (*In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999)). MPEP 2111, second paragraph. (emphasis added).

For the purposes of this response, the Applicants have made reference to a comprehensive dictionary whose subject matter is limited to electrical engineering, and respectfully submit that the definitions of capacitor, capacitance, chip capacitor and dielectric set forth in the appended pages from the dictionary would be accepted by an electrical engineer as being proper and consistent definitions.

With respect to Claims 1-4 and 7, the Examiner asserts that Hernandez discloses "chip capacitors 102 arrayed over an entire area of the first conductive layer 132...." (Office action, page 3, last line bridging page 4, first line). [emphasis added]

The Applicants respectfully traverse this description, relying on the definitions appended hereto.

Hernandez teaches a "high capacitance flexible dielectric sheet" or "high dielectric flexible sheet" "(Hernandez, col. 2 lines 24-32). This sheet is "comprised of a monolayer of multilayer or single layer high dielectric constant (e.g., ceramic) chips or pellets....arranged in a planar array." (Id., col. 1, lines 62-67.) The dielectric material has a typical dielectric constant of 15,000 (Id., col. 4, line 55). "[T]he dielectric sheet is electroless plated with copper or nickel." The capacitance value of the dielectric sheet is given by a formula (Id., col. 4, line 43), where the capacitance value is described in terms of pF/sq. in. This suggests that the capacitance value of the dielectric sheet, when plated with metal layers to form a capacitor, is a function of the area of the metal

plates, which are not part of element 102. It is evident from the description that the metallization extends over a plurality of dielectric chips in a contiguous area, and that therefore each element 102 of the reference is a single ceramic chip, and not a capacitor. The Applicants respectfully submit that element 102 is a chip of dielectric material, and not a capacitor.

Therefore, not all of the elements and limitations of Claim 1, and the arrangement thereof, are found in the reference, and a *prima facie* case of anticipation has not been made out. Lindemann Machinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir 1984) (citing Connell v. Sears Roebuck & Co. 722 F.2d 1542 220 USPQ 193 (Fed. Cir. 1983))

Claims 2-7, 48, 52-54, and 58-60 were rejected for the reasons traversed above, and are allowable for at least the same reasons, or as claims dependent on an allowable claim.

Claims 48, 52-54 and 58 were rejected under 35 U.S.C. § 102 (b) as being anticipated by McKinzie III (US 6,476,771; "McKinzie").

In the advisory action, the Examiner asserts that the term "'capacitors' (which term must necessarily encompass any and all electrical elements capable of capacitive functioning)...." (Advisory action, page 4). The Examiner has not, at least in the advisory action, identified the specific structure that would meet the definition used by the Examiner, and the Applicants respectfully request that the Examiner make reference to a specific structure.

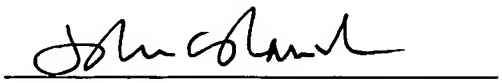
The Applicants respectfully traverse the rejections on the basis that the Examiner has not used the term "capacitor" as a person of ordinary skill in the art (electrical engineering) would have done in understanding the claim and that, as such, a *prima facie* case of anticipation has not been made out.

Conclusion

Claims 1-7, 48, 53-54, 58-60 and 72 are pending. Claim 48 has been amended. For at least the reasons given above, the Applicants respectfully submit that the application is in condition for allowance.

The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application.

Respectfully submitted,



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beryllium is used in some recent cartridges. Also known as the shank.

cantilevered contact — A spring contact in which the contact force is provided by one or more cantilevered springs. It permits more uniform contact pressure and is used almost exclusively in printed-circuit board connectors.

capacitance — Abbreviated *C*. 1. Also called capacity. In a capacitor or a system of conductors and dielectrics, that property which permits the storage of electrically separated charges when potential differences exist between the conductors. The capacitance of a capacitor is defined as the ratio between the electric charge that has been transferred from one electrode to the other and the resultant difference in potential between the electrodes. The value of this ratio is dependent on the magnitude of the transferred charge.

$$C(\text{farads}) = \frac{Q(\text{coulombs})}{V(\text{volts})}$$

2. Capacitance opposes any change in circuit voltage. A voltage change is delayed until the stored charges can be altered through current. The unit of capacitance is the farad. 3. The property of an electric system—comprised of conductors and associated dielectrics—which determines (*a*) the displacement currents in the system for a given rate of potential difference change between the conductors; (*b*) how much electrical charge will be stored in the dielectric for a given potential difference between the conductors.

capacitance alarm system — An alarm system in which a protected object is electrically connected as a capacitance sensor. The approach of an intruder causes sufficient change in capacitance to upset the balance of the system and initiate an alarm signal. Also called a proximity alarm system.

capacitance between two conductors — The ratio between the charge transferred from one conductor to the other and the resultant difference in the potentials of the two conductors when insulated from each other and from all other conductors.

capacitance bridge — A four-arm ac bridge for measuring capacitance by comparison against a standard capacitor.

capacitance detector — *See* Capacitance Sensor.

capacitance divider — A circuit made up of capacitors and used for measuring the value of a high-voltage pulse by making available only a small, known fraction of the total pulse voltage for measurement.

capacitance level detector — A device with single or multiple probes based on the fact that a change in level causes a change in probe capacitance.

capacitance meter — An instrument for measuring capacitance. If the scale is graduated in microfarads, the instrument is usually designated a microfaradmeter.

capacitance-operated intrusion detector — A boundary alarm system in which the approach of an intruder to an antenna wire encircling the protected area (a few feet above ground) changes the antenna-to-ground capacitance and thereby sets off the alarm.

capacitance ratio — The ratio of maximum to minimum capacitance, as determined from a capacitance characteristic, over a specified voltage range.

capacitance relay — An electronic circuit incorporating a relay which responds to a mall change in capacitance, such as that created by bringing the hand or body near a pickup wire or plate.

capacitance sensor — A sensor which responds to a change in capacitance in a field containing a protected object or in a field within a protected area. Also called capacitance detector.

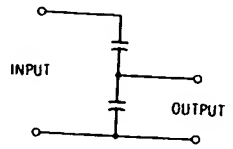
capacitance switch — A keyboard switch where two pads on the circuit board under each keyswitch serve as capacitor plates connected to the drive and sense circuits. Depression of the key causes an increase in the series capacitance, coupling the two elements and creating an analog signal in the sense circuit.

capacitance tolerance — The maximum percentage deviation from the specified nominal value (at standard or stated environmental conditions) specified by the manufacturer.

capacitive coupling — Also called electrostatic coupling. The association of two or more circuits with one another by means of mutual capacitance between them. For example, between stages of an amplifier, that type of interconnection which employs a capacitor in the circuit, between the plate of one tube and the grid of the following tube or the collector of one transistor and the base of the following transistor.

capacitive diaphragm — A resonant window placed in a waveguide to provide the effect of capacitive reactance at the frequency being transmitted.

capacitive-discharge ignition — Also called capacitor-discharge ignition. An electronic ignition system used on internal combustion engines to provide nearly con-



Capacitance divider.

stant high voltage regardless of engine speed. A dc-to-dc stepup converter charges a capacitor when the distributor breaker points are closed; when they are open, the capacitor discharges through the ignition coil, thereby generating the ignition voltage

capacitive divider—Two or more capacitors placed in series across a source, making available a portion of the source voltage across each capacitor. The voltage across each capacitor will be inversely proportional to its capacitance.

capacitive feedback — The process of returning part of the energy in the plate or output circuit of a vacuum tube to the grid, or input, circuit by means of a capacitance common to both circuits.

capacitive load — A predominantly capacitive load—i.e., one in which the current leads the voltage.

capacitive post—A metal post or screw extending at right angles to the *E* field in a waveguide. It provides capacitive susceptance in parallel with the waveguide for purposes of tuning or matching.

capacitive reactance — Symbolized by X_C. The impedance a capacitor offers to ac or pulsating dc. Measured in ohms and equal to $1/2\pi fC$, where f is in hertz and C is in farads.

capacitive speaker — *See* Electrostatic Speaker.

capacitive storage welding—A particular type of resistance welding whereby the energy is stored in banks of capacitors, which are then discharged through the primary of the welding transformer. The secondary current generates enough heat to produce the weld.

capacitive transduction—Conversion of the measurand into a change in capacitance.

capacitive tuning—Tuning by means of a variable capacitor.

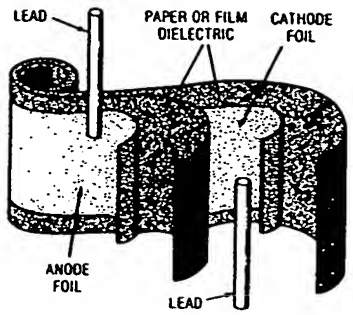
capacitive voltage divider—A combination of capacitors connected in series to form a capacitive voltage dividing device for application with ac voltages.

capacitive welding—An electronic welding system in which energy stored in a capacitor is discharged through the joint to be welded. The resulting current develops the heat necessary for the operation.

capacitive window — A conductive diaphragm extended into a waveguide from one or both sidewalls to introduce the effect of capacitive susceptance in parallel with the waveguide.

capacitivity—*See* Dielectric Constant.

capacitor—1. A device consisting essentially of two conducting surfaces separated by an insulating material or dielectric such as air, paper, mica, glass, plastic film, or oil. A capacitor stores electrical energy, blocks the flow of direct current,



Capacitor (internal construction).

and permits the flow of alternating current to a degree dependent essentially upon the capacitance and the frequency. 2. An electrical energy storage device used in the electronics industry for varied applications, notably as elements of resonant circuits, in coupling and bypass application, blockage of dc current, as frequency determining and timing elements, as filters and delay-line components, and in voltage transient suppression.

capacitor antenna — Also called condenser antenna. An antenna which consists of two conductors or systems of conductors and the essential characteristic of which is its capacitance.

capacitor bank—A number of capacitors connected together in series, parallel, or in series-parallel.

capacitor braking—A means of stopping an induction motor. The capacitor or capacitors can be applied to the winding after shut-off.

capacitor color code — Color dots or bands placed on capacitors to indicate one or more of the following: capacitance, capacitance tolerance, voltage rating, temperature coefficient, and the outside foil (on paper or film capacitors).

capacitor-discharge ignition — *See* Capacitive-Discharge Ignition.

capacitor discharge system — An ignition system that stores its primary energy in a capacitor.

capacitor electrolyte — A current conducting material (nonsolid or solid) serving as the cathode in an electrolytic capacitor.

capacitor filtering — A method for improving the form factor of a direct current by means of a parallel capacitor. Also, a means for increasing the magnitude of a rectified voltage.

capacitor-input filter—A power-supply filter in which a capacitor is connected directly across, or in parallel with, the rectifier output.

capacitor losses—The active power dissipated by a capacitor.

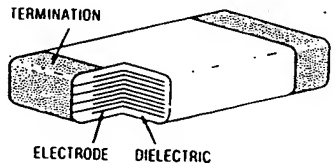
Child's law — Also known as the three-halves power equation. It states that the current in a thermionic diode varies directly with the three-halves power of the anode voltage and inversely with the square of the distance between electrodes.

chip—1. Also called thread. In mechanical recording, the material removed from the recording medium by the recording stylus as it cuts the groove. 2. In punched cards, a piece of cardboard removed in the punching process. 3. A single substrate on which all the active and passive circuit elements have been fabricated using one or all of the semiconductor techniques of diffusion, passivation, masking, photoresist, and epitaxial growth. A chip is not ready for use until packaged and provided with external connectors. The term is also applied to discrete capacitors and resistors which are small enough to be bonded to substrates by hybrid techniques. 4. A tiny piece of semiconductor material scribed or etched from a semiconductor slice on which one or more electronic components are formed. The total number of usable chips obtained from a wafer is the yield. 5. An unpackaged semiconductor device; a die incorporating an integrated circuit cut from a silicon wafer. By extension, every LSI package is commonly called a chip. 6. An electronic circuit element prior to having terminal connections added and prior to being encased for physical protection. 7. A single piece of semiconductor material (silicon, sapphire, germanium, etc.) containing one or more circuits, usually packaged as a unit.

chip and wire — A hybrid technology employing face-up bonded chip devices, interconnected to the substrate conventionally, i.e., by "flying" wires.

chip architecture—The design or structure of an IC chip, incorporating arithmetic-logic unit, registers, and control-bus pathway configuration.

chip capacitor—1. A capacitor of which the small dimensions or the nature and configuration of its terminations render it suitable for use mainly in hybrid circuits. 2. Discrete device which introduces capacitance into an electronic circuit, made in tiny wedge or rectangular shapes to be soldered onto hybrid circuits. 3. A subminiature capacitor (usually ceramic or solid tantalum) in chip form.



Chip ceramic (multilayer) capacitor.

chip component—An unpackaged circuit element (active or passive) for use in hybrid microelectronics. Besides ICs, the term includes diodes, transistors, resistors, inductors, and capacitors.

chip-in-tape — An automated hybrid bonding technique which provides multiple, simultaneous bonding of leads by means of thermal and mechanical energy transmission through a deformable prepunched tape.

chip-outs — Semiconductor die defects where fragments of silicon on the face have been chipped off in processing, leaving an active junction exposed.

chip resistor — A subminiature resistor formed on a small insulating substrate.

chip sets — The microprocessor chip in addition to RAMs, ROMs and interface i/o devices. The chip sets mounted on a board are also referred to as the CPU portion of the microcomputer. Also called microcontroller.

Chireix antenna — Resonant series-fed array of square loops with half-wave sides. The loops feed each other in cascade, corner to corner, and the antenna resembles a double zigzag. Also called Chireix-Mesny antenna.

chirp — 1. An all-encompassing term for the various techniques of pulse expansion-pulse compression applied to pulse radar. A technique to expand narrow pulses to wide pulses for transmission, and to compress wide received pulses to the original narrow pulse width and waveshape. This improves the signal-to-noise ratio without degradation to the range resolution and range discrimination. 2. A colloquial expression for a coded pulse. In coding the pulse, the carrier frequency is increased in a linear manner for the duration of the pulse, and when the pulse is translated to an audio frequency, it sounds like a chirp. 3. A change in the pitch of code signals, generally due to poor regulation of the transmitter power supply.

chirp modulation — Swept-frequency modulation used in some radar and sonar equipment to increase the on-target energy and improve range resolution by making full use of the average power capability of the transmitter.

chirp radar—Radar in which a swept-frequency signal is transmitted, received after being returned from a target, and compressed in time to give a final narrow pulse called the chirp signal. This type of radar has high immunity to jamming and provides inherent rejection of random noise signals.

choke—1. An inductance used to impede the flow of pulsating direct current or alternating current by means of its self-inductance. 2. An inductance used in a circuit to present a high impedance to fre-

light has its electric-field vector in a particular orientation and not absorbed when the electric-field vector has other orientations. 2. In antisotropic materials, such as some crystals, the selective absorption of light rays vibrating in one particular plane relative to the crystalline axes, but not those vibrating in a plane at right angles thereto. As applied to isotropic materials, this term refers to the selective reflection and transmission of light as a function of wavelength regardless of its plane of vibration. The color of such materials, as seen by transmitted light, varies with the thickness of material examined. Also called dichromatism or polychromatism.

dichromatism—*See* Dichroism.

dicing—The process of sawing a crystal wafer into blanks.

dictionary—In digital computer operations, a list of mnemonic code names together with the addresses and/or data to which they refer.

diddle—Automatic transmission of letter or figure characters by the terminal unit if no characters are ready for transmission (most often used with a fifo memory).

die—1. Sometimes called chip. A tiny piece of semiconductor material, broken from a semiconductor slice, on which one or more active electronic components are formed. (Plural: dice.) 2. A portion of a wafer bearing an individual circuit or device cut or broken from a wafer containing an array of such circuits or devices. 3. An uncased discrete or integrated device obtained from a semiconductor wafer. *See* chip. 4. A single miniature active or passive component. So named because the circuits are batch-fabricated by diffusion processes on a silicon wafer, which is then cut into individual components. Examples: transistors, diodes, integrated circuits, diffused resistors.

die-attach—The operation of mounting chips to a substrate. Methods include gold-silicon eutectic bonding, various solders, and conductive (and nonconductive) epoxies.

die bond—1. Attachment of a die or chip to the hybrid substrate. 2. A process in which chips are attached to a substrate (gold, epoxy, wax, etc.). The joint between a die and the substrate.

die bonding—1. The method by which a semiconductor die, or chip, is attached to a mechanical support. 2. Attaching semiconductor chip to the substrate, with an epoxy, eutectic, or solder alloy. 3. The attachment of a die to a gold base such as a substrate pad or to a header. Heat, pressure, and a mechanical scrubbing action are used to create a gold-silicon eutectic bond between the die and base.

dielectric—1. The insulating (nonconducting) medium between the two plates of a capacitor. Typical dielectrics are air, wax-impregnated paper, plastic, mica, and ceramic. A vacuum is the only perfect dielectric. 2. A medium capable of recovering, as electrical energy, all or part of the energy required to establish an electric field (voltage stress). The field, or voltage stress, is accompanied by displacement or charging currents. 3. The insulating material between the metallic elements of an electromechanical component or any of a wide range of thermoplastics or thermosetting plastics. 4. Any insulating medium which intervenes between two conductors and permits electrostatic attraction and repulsion to take place across it. 5. A material having the property that energy required to establish an electric field is recoverable, in whole or in part, as electric energy. 6. A material medium in which an electric field can exist in the stationary state. 7. Characteristic of materials that are electrical insulators or in which an electric field can be sustained with a minimum dispersion of power. They exhibit nonlinear properties, such as anisotropy of conductivity or polarization, or saturation phenomena.

dielectric absorption—1. Also called dielectric hysteresis (short-term effect), or dielectric soak (long-term effect). A characteristic of dielectrics which determines the length of time a capacitor takes to deliver the total amount of its stored energy. It manifests itself as the reappearance of potential on the electrodes after the capacitor has been discharged. Its magnitude depends on the charge and discharge time of the capacitor. 2. That property of an imperfect dielectric as a result of which all electric charges within the body of the material because of the application of an electric field are not returned to the field. 3. Reluctance of a capacitor to give up all the electrons stored when the capacitor is discharged. Primarily caused by a polarization effect of dielectric dipoles and to a lesser extent by free electrons in the dielectric requiring a finite time to move to the electrode. The recovery voltage appearing after discharge divided by the charging voltage and expressed as a percent is called the percent dielectric absorption. 4. The property of a capacitor with slow polarization of its dielectric which results in voltage appearance on the capacitor electrodes after its short-term discharge through a low resistance.

dielectric amplifier—An amplifier employing a device similar to an ordinary capacitor, but with a polycrystalline dielectric which exhibits a ferromagnetic effect.

dielectric analysis—Method of directly monitoring resin cooking, resin staging, and resin curing. Such analysis eliminates